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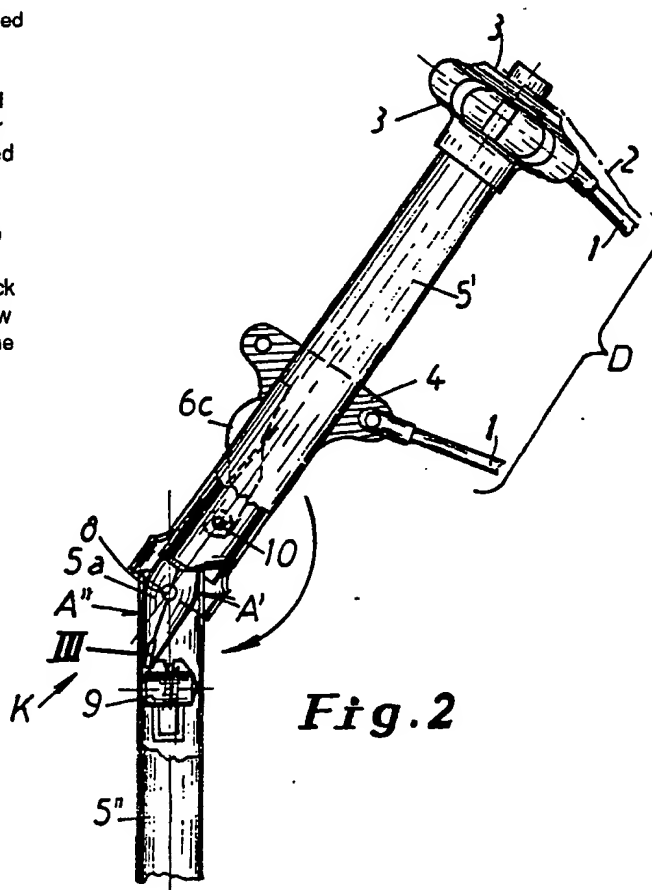
**A4P**

**Selected US specifications from IPC sub-class**

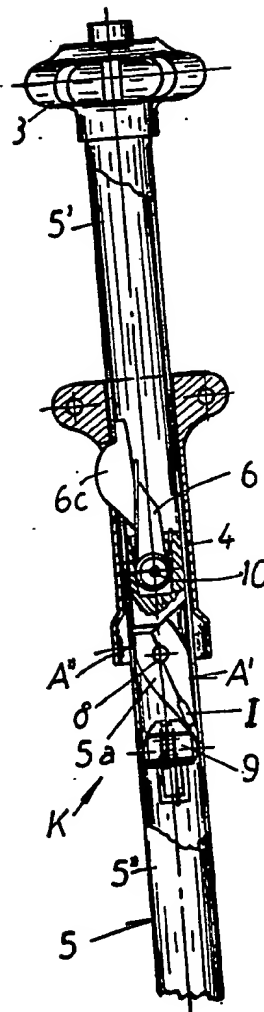
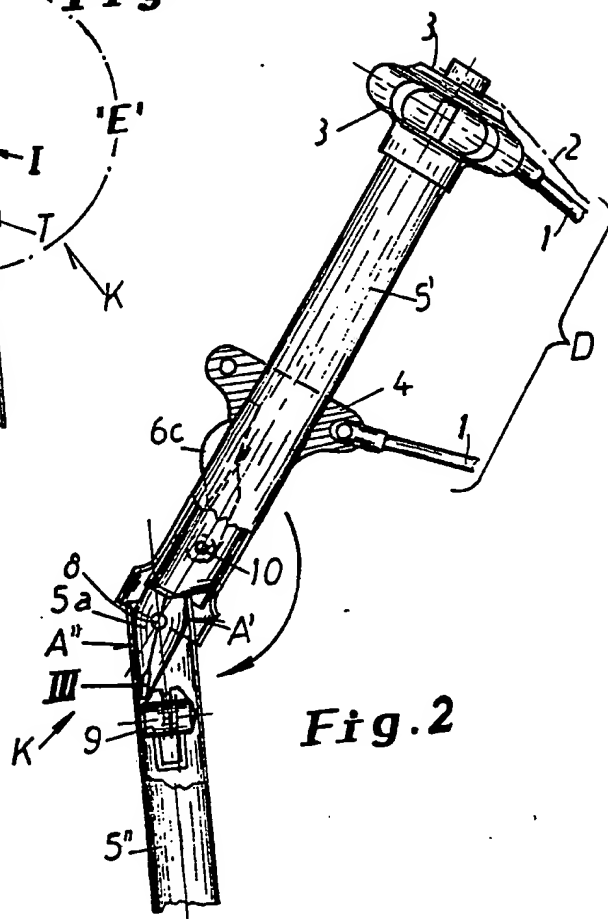
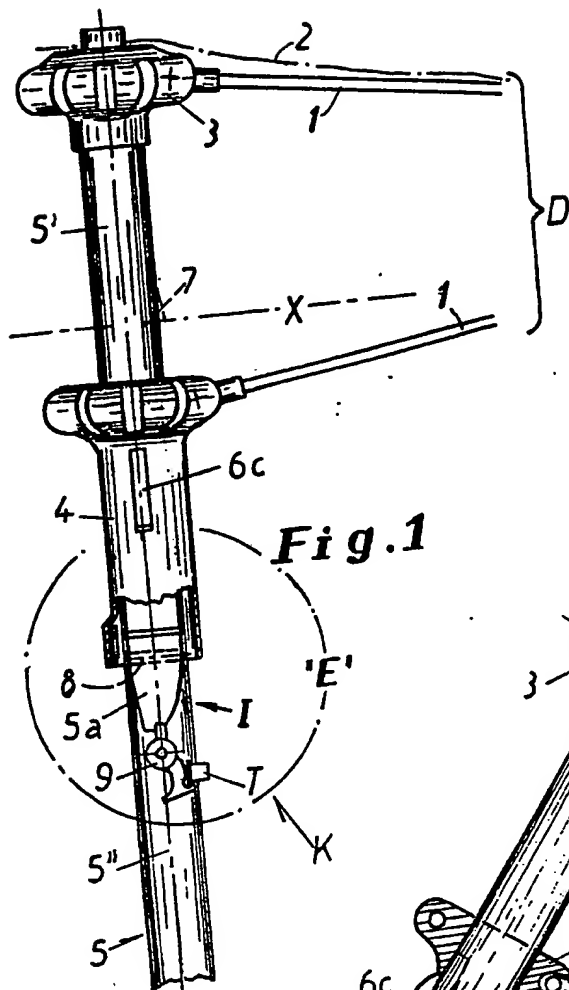
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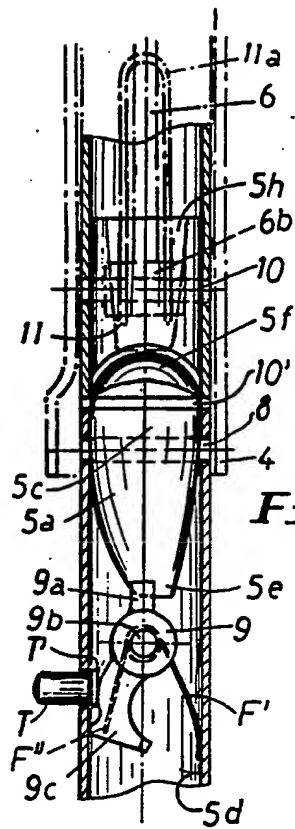
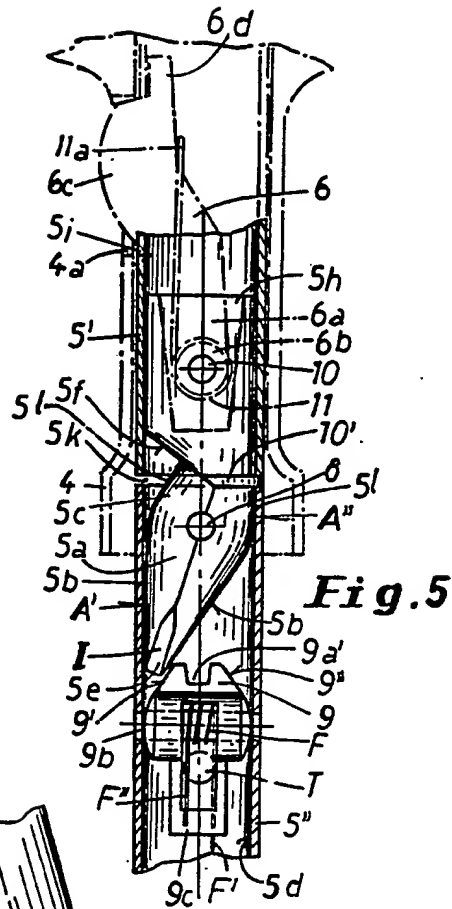
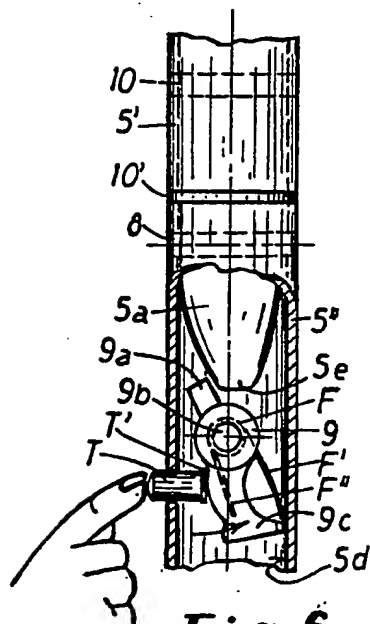
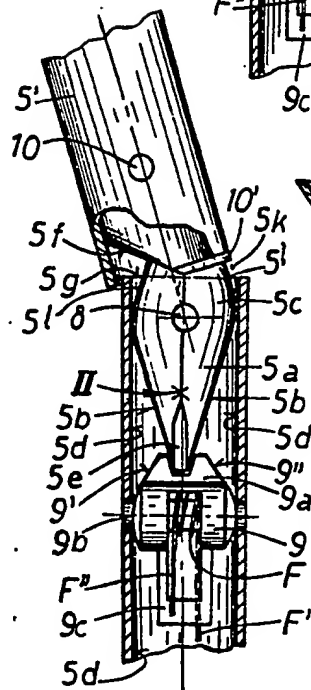
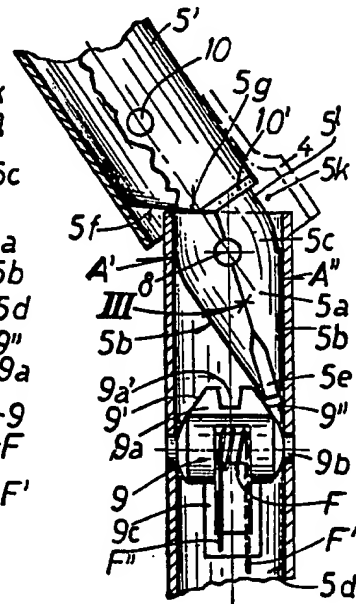
(54) **Tilting umbrella frame**

(57) A standing umbrella frame has a column formed by a lower stick (5'') and a relatively tiltable upper stick (5') which carries a canopy supporting frame (D). The relative tilting of the two sticks is provided by a connector element, which is fixed to the upper stick (5') and extends into and is pivotally connected at an elbow joint (8) to the lower stick (5''). A tapering projection (5a) of the element has flanks which abut inner wall parts of the lower stick (5'') to limit the tilting movement in both directions. A latching device (9), which is pivotal in the lower stick (5'') about an axis perpendicular to that of the elbow joint (8), has a projecting abutment which blocks the projection (5a) in its two end positions.



**GB 2 202 141 A**



**Fig. 4****Fig. 5****Fig. 6****Fig. 7****Fig. 8**

DESCRIPTIONStanding umbrella frame

5           The invention relates to a standing umbrella  
frame of the kind with a standing column comprising a  
lower stick and an upper stick, which is tiltable  
relatively to the lower stick by means of an elbow  
joint, one of the sticks being equipped with a  
10 projection extending beyond the elbow joint and  
projecting into the other stick where it rocks to and  
fro as the two sticks tilt relatively to one another  
and where its opposed flanks are arranged to engage  
respective ones of opposed inner wall parts of the  
15 other stick to limit the tilting movement between the  
two sticks and thus define two end positions of tilt,  
the projection being blockable in at least these two  
end positions by means of a latching device which can  
be released by means of a manually actuable button;  
20 the upper stick carrying a cover supporting frame,  
which is opened and closed by means of a slider  
having retention means for holding the frame open.

A stick tilting mechanism for a standing  
umbrella is already described, for example, in  
25 DE-GM-1,880,393. In addition, for example,  
US-A-2,863,466 and US-A-2,863,468 show spring-loaded  
bolts and buttons for such tilting mechanism. A  
common feature of all these prior disclosures and  
also of the entire known relevant state of the art,  
30 is that the tilting mechanisms are exposed, are  
therefore highly exposed to wet, dust and dirt and  
therefore to corrosion, and moreover, because of  
their projecting corners and edges, represent a  
danger of injury during the handling of the  
35 umbrella. For example, in the bending mechanism  
shown in the German utility model, although it is  
encased in the standing column when the latter is

extended straight, nevertheless when the standing column is to be tilted the upper stick first has to be unscrewed from the bending mechanism until it can be pivoted beyond a catch on the lower stick, and then, likewise in the tilted position with the bending joint exposed, it is screwed up again by an amount corresponding to the unscrewing stroke. Moreover, this mechanism requires a slot in the wall of the lower stick for the projection of the upper stick serving as a fixing arm, and because of this wet, dust and dirt can also penetrate from above and laterally through the slot in the bending mechanism and into the stick interior. Furthermore, here too, there is the danger of injury from sharp open edges.

In contrast to this, the object on which the invention is based is to improve an umbrella of the kind initially referred to in such a way that wet, dust and dirt substantially cannot penetrate easily into the tilting mechanism and from there into the interior of the standing column, specifically not even when the latter is in the tilted position, and, in particular, so that even in this position sharp edges and corners do not project from the tilting mechanism, thus avoiding injury during the handling of the umbrella.

According to the invention, this object is achieved by a frame wherein the projection is in the form of a beak-like portion of a connector member, which is fixed firmly in the one stick and projects into a cavity continuously surrounded by the wall of the other stick where the connector member is pivotally connected to the other stick to provide the elbow joint; and wherein the latching device, which is pivotally mounted in the cavity of the other stick in the region of the beak-like portion of the connector member, is urged by a spring to its blocking position and can be disengaged from its

blocking position by means of the button counter to the effect of the spring, whereupon the beak-like portion of the connector member obtains a passing clearance from the latching device within the cavity for adjustment of the relative tilt of the sticks.

This results in an umbrella frame of the kind initially referred to the tilting mechanism of which is arranged in the standing column so as to be substantially completely encased in it when the latter is extended straight and when it is tilted, since the projection serving as a fixing arm for one stick of the standing column is rockable solely in the stick cavity, without the need for a slot in the wall of one of the sticks. Consequently, wet, dust and dirt cannot easily penetrate into the tilting mechanism or from there into the cavity of the sticks. Corrosion or even complete rusting-in of the mechanism and corresponding difficulty of movement or even failure of the tilting action, as well as corrosion damage in the standing column, are prevented as a result. Furthermore, the standing column or the umbrella cover can always be tilted easily. Since there need be no edges and corners projecting in the tilting region, even when the standing column is tilted the danger of injury is also avoided.

Preferably, the pivotal axes of the latching device and of the connector member are both transverse to the axis of the other stick and to one another.

The connector element may also have to the side of the elbow joint nearer to the one stick, further opposed flanks which are arranged to engage respective ones of opposed inner wall parts of the other stick adjacent to the end of the other stick additionally to limit the tilting movement between the two sticks and thus define the two end positions.

of tilt.

In one end position of tilt in which the axes of the two sticks are inclined to one another, the end edge of the other stick may be engaged by a  
5 notched portion of the connector member, additionally to support the parts in that tilted position.

The arrangement may be such that, in each end position, when the latching device is in its blocking position, a nose at the tip of the beak-like portion  
10 is trapped between a respective inner wall part of the other stick and a respective flank of an abutment on the latching device.

Intermediate positions between the two end positions can be obtained advantageously, without any  
15 special extra outlay, if the latching device incorporates an engagement groove which, when the latching device is in its blocking position, can receive the nose at the tip of the beak-like portion to secure the two sticks in an intermediate position  
20 of tilt.

The latching device may comprise a two armed lever, one arm of which acts as an abutment to block the projection in at least the two end positions of tilt, and the other of which acts to limit the spring  
25 urged rotation of the latching device by taking a reaction from the wall of the other stick.

The button may be guided displaceably in an opening in the wall of the other stick and be held non-positively against the second lever arm of the  
30 latching device but so as to be captive in the opening.

A further particular benefit as regards additional encasing of the tilting region of the standing column is obtained if the connector member  
35 has a plug of metal or plastics material which is inserted into the one stick and is secured therein by means of a cross-pin, the cross-pin serving as a



bearing axle for a retention member which holds the slider in the frame open position, the slider, in this position, surrounding and substantially concealing the adjacent open ends of the two sticks.

5        An example of an umbrella incorporating a frame constructed in accordance with the invention is illustrated in the accompanying drawings, in which:-

Figure 1 shows the upper part of a standing umbrella with the cover opened and the standing  
10       column extended straight, according to a blocking position I;

Figure 2 shows the upper part according to Figure 1, but with the stick angled according to a blocking position III, the column having been rotated  
15       through 90°;

Figure 3 shows the upper part according to Figure 1, but rotated 90° around the extended column according to the blocking position I;

Figure 4 shows the tilting mechanism of the  
20       column according to the portion "E" of Figure 1, on an enlarged scale;

Figure 5 shows the mechanism according to Figure 4, but rotated 90° according to the blocking position I;

25       Figure 6 shows the mechanism according to Figure 1, but in the state in which the latch is released;

Figure 7 shows the mechanism rotated 90° relatively to Figure 4, with the umbrella cover in a partly tilted position according to blocking position  
30       II; and,

Figure 8 shows the mechanism according to Figure 7, but with the standing column in the extreme tilted position according to the blocking  
35       position III.

The illustrated umbrella has a cover D composed of a cover supporting frame having cover ribs and

struts 1, and of a cover sheeting 2 supported by the frame. The cover ribs and struts 1, of which only one respective pair is shown in Figures 1 and 2 for the sake of clarity, are articulated pivotally in a star-shaped arrangement on an umbrella crown 3 and on an actuating slider 4. The slider 4 is displaceable up and down on a hollow standing column 5, so that, when the slider 4 is pushed upwards, the umbrella cover D is spread out and opened (see Figure 1) or, when the slider 4 is pulled downwards, it is folded together so as to extend parallel to the standing column 5, that is to say is closed (not shown). The umbrella crown 3 and the cover sheeting 2 are fastened to the top end of the standing column 5. The standing column 5, at its bottom end, is held in, but so that it can be raised out of, a vertical tube (not shown in detail) of a standing base, or else is fixed directly to the standing base. When the umbrella cover D is in the opened position, the slider 4 can be locked by means of a manually releaseable retention member 6 or by being pushed up a little higher than shown in Figure 1, beyond a dead centre position in the plane X, until it comes up against a stop 7.

In order to obtain the fully tilted position of the umbrella cover D shown in Figure 2, the hollow standing column 5 is equipped with a tilting mechanism K and therefore comprises two tubular parts, namely an upper stick 5' and a lower stick 5". The tilting mechanism K has an elbow joint 8 which tiltably connects the upper stick 5' to the lower stick 5". Assigned to the tilting mechanism K is a latch 9, which secures it in a straight untilted position (Figure 1) and in the fully tilted position (Figure 2) and, if appropriate, also in an intermediate less tilted position, and which can be released manually by means of a button T when the

tilt of the umbrella cover D is to be adjust d. The tilting mechanism K, the latch 9 and the means of releasing the latter, are arranged inside the upper and lower sticks 5', 5", in such a way that from outside they appear substantially encased and are thus protected against the influences of the weather, corrosion and dirt and, moreover, also substantially do not project from the standing column 5, so that the danger of injury during the handling of the umbrella is also avoided.

For this purpose, the upper stick 5' is connected to the lower stick 5" by means of a connector element, which has a head 5c extending into the lower stick 5" and pivoted at a mid bulbous portion to the lower stick 5" by an axle to form an elbow joint 8, the head having a tapering beak-like portion forming a projection 5a extending beyond the joint 8. The projection 5a can swing to and fro like a rocker within the inner wall 5d of the lower stick 5", and when either one of two opposed flanks 5b, 5b comes up against the inner wall 5d two diametrically opposite pivoting limit stops A' and A" for the upper stick 5' are produced. The locking of the projection 5a at these stops A', A" by means of the latch 9 causes the projection 5a to be fixed in end positions, because its nose 5e is fixed between the inner wall 5d and the respective flanks 9', 9" of an abutment 9a of the latch 9 (Figures 5 and 8). The locking of the projection 5a between the flank 9' and inner wall 5d corresponds to the blocking position I according to Figure 5, and the locking of the projection 5a between the flank 9" and the inner wall 5d defines the blocking position III according to Figure 8.

The latch 9 is preferably designed as a two-armed lever which is pivotally mounted in the stick 5" by means of an axle 9b extending transversely relative to that of the joint 8, that is

to say intersecting this crosswise, but also transversely to the axis of the lower stick 5". One lever arm of the latch 9 is formed by the abutment 9a, and the other lever arm 9c of the latch 9 serves for supporting it from the inner wall 5d counter to the rotational effect of a spring F and for interacting with the button T already mentioned. The spring F is preferably a torsion spring with legs F' and F", of which one leg F' is supported on the inner wall 5d and the other leg F" on the lever arm 9c, in such a way that, in the blocking position evident from Figures 1 and 4, the lever arm located diametrically opposite the latter and in the form of the abutment 9a is held resiliently opposite the nose 5e. Of the blocking positions I and III described above, the position I corresponds to the standing column 5 extended straight (Figures 1, 3 and 5), whilst the position III defines the angled standing column 5 with the umbrella cover D tilted correspondingly obliquely (Figures 2 and 8). As is evident, for example, from Figure 7, between the two blocking positions I and III there can also be one or more intermediate blocking positions corresponding to blocking position II, if the abutment 9a of the latch 9 has one or more grooves 9a', into which the projection 5a engages. Despite the small clearance in the cavity of the standing column 5, the umbrella cover D can thus, if desired, also be tilted less obliquely than in the extreme tilting position according to Figure 2. The head 5c has a notch 5f, by means of which, in the tilted blocking position III of the standing column 5, it rests from above, and is supported on the end edge 5g. Thus in addition to the support provided by the pivoting limit stop A", increased stabilization of the angled standing column 5 is achieved.

When the umbrella cover D is to be tilted or

arranged upright and the standing column 5 has to be angled or set straight accordingly, the button T must first be actuated. This is mounted in the lower stick 5" so as to be displaceable transversely relatively to the axle 9b of the bolt 9 in an opening in the wall of the lower stick 5" and rests by means of a collar T' against one lever arm 9c of the latch 9. By means of this collar T', in the position of rest according to Figure 4, the button T is held against the inner wall 5d by the spring-loaded lever arm 9c, so that it cannot fall out of the lower stick 5". When the button T is pressed in by a finger of one hand, it rotates the latch 9 counter to the spring force, until the latter comes up against the inner wall 5d by means of the lever arm 9c. In this position, the abutment 9a of the latch 9 is moved out of its blocking position relative to the nose 5e (Figure 6), so that with the other hand the projection 5a can be pivoted in one desired direction or the other in conjunction with the tilting movement of the upper stick 5', that is to say into the positions shown, with the standing column 5 straight (Figures 1,5) or with the standing column 5 angled (Figures 2,7 and 8). In the particular position selected, it is then necessary merely to release the button T again. This ensures that the latch 9 returns to the initial position shown in Figure 4 under the effect of the spring F, thereby pushing out the button T, and the abutment 9a at the same time also resumes its locking position relative to the projection 5a according to Figures 4 and 5 (blocking position I with the umbrella cover D set straight) or according to Figure 8 (blocking position III with the umbrella cover D in the extreme tilted position) or according to Figure 7 (blocking position II with the umbrella cover D in a less tilted position).

The connector element, which is made of metal

or impact-resistant and unbreakable plastics material, incorporates a plug which is pressed into the upper stick 5' and fixed in it by means of a crosspin 10 (Figure 4), and which has a stop collar 10' defining the press-in depth. As is evident from Figures 4 and 5, the crosspin 10 can preferably at the same time also serve as a pivot axle for the retention member 6 locking the slider 4 when the umbrella cover D is opened. For this purpose, in the body of the plug there is a recess 5h, into which the retention member 6 in the form of a one-armed pawl lever penetrates, in such a way that the latter, mounted on the crosspin 10 by means of a rotary bush 6b, has sufficient pivotal play, which the retention member or pawl lever 6 needs so that its locking nose 6c can be pressed into the upper stick 5' in order to release the slider 4. The retention member 6 is held, by means of a torsion spring 11 coiled round the rotary bush 6b, in the locking position which is evident from Figure 5 and in which the retention member 6, projecting through a slot 5i in the upper stick 5' by means of the locking nose 6c, engages in a locking slot 4a of the slider 4. The depth of engagement of the locking nose 6c in the locking slot 4a of the slider 4 is limited by a stop nose 6d, the torsion spring 11 hooking behind the retention member 6 by means of a hairpin-shaped leg 11a so as to load it in the anti-clockwise direction in Figure 5. The above-described efficient arrangement and design of the tilting mechanism K, in conjunction with the slider 4 and its retention member 6, also has the advantage that the slider 4 at the same time also masks the open ends 5k of the upper and lower sticks 5', 5" to give protection against wet and dust and the danger of injury, when the umbrella cover D is opened and straight or tilted and when the standing column 5 is extended straight or angled. In the two

nd tilting positions of the upper stick 5' (Figures 5 and 8), the head 5c is also supported against the inner wall 5d near to the open end 5k of the lower stick 5" by means of a narrowed portion 5l. This  
5 narrowed portion 5l is obtained from the rounding of the head 5c, by means of which the latter merges into the plug body above the joint 8. The above-mentioned support provides a stabilization of the tilting mechanism in addition to the already described  
10 pivoting limit stops A' and A", the supports 5k and 5l being respectively diametrical relatively to the stops A', A" across the joint 8.

The connector 5 can just as well be fixed in the lower stick 5" and project into the upper stick  
15 5', in order to interact with the latch 9 which is therefore located in the upper stick 5' and which once again would be actuable by means of the button T likewise arranged in the upper stick 5'. Accordingly, the above described kinematics must also  
20 be considered as an inverse arrangement in terms of the upper and lower sticks 5', 5", without the need for any more detailed explanation in this respect.

Furthermore, the connector could be formed integrally with one of the sticks so that the head 5c  
25 forms an extension of that stick, and the plug is unnecessary.

30

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CLAIMS

1. A standing umbrella frame with a standing column comprising a lower stick and an upper stick, which is tiltable relatively to the lower stick by means of an elbow joint, one of the sticks being equipped with a projection extending beyond the elbow joint and projecting into the other stick where it rocks to and fro as the two sticks tilt relatively to one another and where its opposed flanks are arranged to engage respective ones of opposed inner wall parts of the other stick to limit the tilting movement between the two sticks and thus define two end positions of tilt, the projection being blockable in at least these two end positions by means of a latching device which can be released by means of a manually actuatable button; the upper stick carrying a cover supporting frame, which is opened and closed by means of a slider having retention means for holding the frame open; wherein the projection is in the form of a beak-like portion of a connector member, which is fixed firmly in the one stick and projects into a cavity continuously surrounded by the wall of the other stick where the connector member is pivotally connected to the other stick to provide the elbow joint; and wherein the latching device, which is pivotally mounted in the cavity of the other stick in the region of the beak-like portion of the connector member, is urged by a spring to its blocking position and can be disengaged from its blocking position by means of the button counter to the effect of the spring, whereupon the beak-like portion of the connector member obtains a passing clearance from the latching device within the cavity for adjustment of the relative tilt of the sticks.

2. A frame according to claim 1, wherein the



pivotal axes of the latching device and of the connector member are both transverse to the axis of the other stick and to one another.

5     3.   A frame according to claim 1 or claim 2,  
          wherein the connector member also has, to the side of  
          the elbow joint nearer to the one stick, further  
          opposed flanks which are arranged to engage  
10        respective ones of opposed inner wall parts of the  
          other stick adjacent to the end of the other stick  
          additionally to limit the tilting movement between  
          the two sticks and thus define the two end positions  
          of tilt.

15     4.   A frame according to any one of the preceding  
          claims, wherein, in one end position of tilt in which  
          the axes of the two sticks are inclined to one  
          another, the end edge of the other stick is engaged  
          by a notched portion of the connector member,  
20        additionally to support the parts in that tilted  
          position.

          5.   A frame according to any one of the preceding  
          claims, wherein in each end position, when the  
25        latching device is in its blocking position, a nose  
          at the tip of the beak-like portion is trapped  
          between a respective inner wall part of the other  
          stick and a respective flank of an abutment on the  
          latching device.

30

          6.   A frame according to claim 5, wherein the  
          abutment on the latching device incorporates an  
          engagement groove which, when the latching device is  
          in its blocking position, can receive the nose at the  
35        tip of the beak-like portion to secure the two sticks  
          in an intermediate position of tilt.

7. A frame according to any one of the preceding claims, in which the latching device comprises a two armed lever, one arm of which acts as an abutment to block the projection in at least the two end positions of tilt, and the other of which acts to limit the spring urged rotation of the latching device by taking a reaction from the wall of the other stick.

8. A frame according to claim 7, wherein the button is guided displaceably in an opening in the wall of the other stick and is held non-positively against the second lever arm of the latching device but so as to be captive in the opening.

9. A frame according to any one of the preceding claims, wherein the one stick is the upper stick and the connector member has a plug of metal or plastics material which is inserted into the one stick and is secured therein by means of a cross-pin, the cross-pin serving as a bearing axle for a retention member which holds the slider in the frame open position, the slider, in this position, surrounding and substantially concealing the adjacent open ends of the two sticks.

10. A standing umbrella frame substantially as described with reference to the accompanying drawings.

11. A standing umbrella having a frame according to any one of the preceding claims, and a cover sheeting supported by the cover-supporting frame.